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# THE EFFECTIVENESS OF DRINK DRIVING LICENCE ACTIONS, REMEDIAL PROGRAMS AND VEHICLE-BASED SANCTIONS

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## ABSTRACT

This paper reviews the effectiveness of three important types of drink driving sanctions: licence actions, remedial programs and vehicle-based actions. The sanctions are assessed in terms of their effect on the drink driving behaviour of both the general community and offenders. The results confirm that licence actions, such as licence suspension/disqualification, are very effective. In terms of general deterrence, they are the only sanctions that have been consistently associated with reductions in community-wide drink driving behaviour. As an offender management tool, licence actions are effective in reducing the **overall** offence and crash rates of offenders, although many offenders continue to drive. In contrast, remedial programs appear more effective in reducing **alcohol-specific** offences among offenders. On balance, the best outcomes with offenders appear to be achieved through the combined use of licence actions and remedial programs. Promising results have also been achieved through the use of alcohol ignition interlocks and, to a lesser extent, other vehicle-based sanctions designed to reduce the incidence of illegal driving among offenders. However, drink driving recidivism and disqualified/suspended driving remain serious problems requiring further attention. The implications for policy development and research in Australia are discussed.

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## INTRODUCTION

A variety of legal sanctions are applied to drink drivers throughout the motorised world. Major differences can exist in the way these sanctions are administered, depending on whether the primary objective is to punish, restrain or reform offenders. Nevertheless, the more common sanctions tend to fall into one of the following categories:

- fines;
- licence actions (restriction or removal of driving privileges eg. disqualification);
- remedial programs (assessment, treatment or rehabilitation);
- vehicle sanctions (alcohol ignition interlocks, vehicle impoundment or immobilisation);
- confinement (gaol, home detention, community service orders).

Over the last three decades, considerable research has been conducted into the effectiveness of these sanctions. The primary concern has been to establish their effect on drink driving recidivism and alcohol-related crash involvement among offenders. Considerable attention has also been given to the effect of sanctions on the behaviour of the general driving community.

A number of comprehensive reviews were undertaken into the effectiveness of drink driving sanctions in the late 1980s and early 1990s (Nichols & Ross, 1990; Vingilis *et al*, 1990; Sanson-Fisher *et al*, 1990; McKnight & Voas, 1991; Peck, 1991; Ross, 1992). At this time, the prevailing view was that the most effective sanctions were those which were both certain and swift in their impact, such as licence actions. More severe penalties, such as gaol sentences, appeared to be less effective and more costly to implement. While some positive results had been obtained from remedial programs, particularly when combined with licence actions, the overall effectiveness of the approach was questioned. Some preliminary results had begun to

emerge from alcohol ignition interlock programs suggesting that they could be effective in reducing recidivism, at least while they were fitted to an offender's vehicle (Baker & Beck, 1991; Morse & Elliott, 1992).

More recent research has confirmed some of these conclusions, while challenging others. For example, while evaluations have continued to confirm the effectiveness of licence actions, they appear far from perfect as an offender management tool since many disqualified/suspended drivers continue to drive (Nichols & Ross, 1990; Mirrlees-Black, 1993). Despite the historical lack of evidence in favour of remedial programs, many jurisdictions have continued to utilise this approach. This faith in rehabilitation now appears more justified, with recent reviews producing more positive results (eg. Wells-Parker, *et al*, 1995). A new wave of studies have focussed on the effectiveness of alcohol ignition interlock programs and other vehicle-based sanctions, like vehicle impoundment and special registration plate stickers (Beck *et al*, 1997; Beirness *et al*, 1997; Voas *et al*, 1997). While the results are not definitive, they suggest that these approaches can be effective in reducing both drink driving recidivism and unlicensed driving. Despite these successes, offence and crash data indicate that drink driving recidivism remains a serious problem (Sheehan, 1993; Hedlund & Fell, 1997). Of international concern, are the 'hard core' drivers who repeatedly drive after drinking, usually with very high blood alcohol concentrations (BACs), and often while disqualified/suspended (Mayhew *et al*, 1997; Hedlund & Fell, 1997).

The majority of the research and development relating to drink driving sanctions has occurred in North America and Europe. In Australia, by contrast, there has been a greater concentration on the methods used to detect and apprehend drink drivers and the related effect on general deterrence. For example, the implementation of Random Breath Testing (RBT) throughout Australia has proven highly effective in reducing alcohol-related crashes (Homel, 1988; Cavallo & Cameron, 1992; Henstridge, Homel & Mackay, 1997) and attracted international attention (eg. Ross, 1992).

However, there is a growing awareness in Australia of the need to better utilise drink driving sanctions. Recently, a number of states have conducted comprehensive reviews in the area (eg. Staysafe, 1993; Duhs *et al*, 1997). In 1997, the Australian Transport Council (ATC, 1997) endorsed a *National Road Safety Package* that recommended all jurisdictions review their enforcement and penalty regimes. It recommended minimum licence suspension periods for driving with a BAC of more than 0.05 (at least three months) and more than 0.15 (at least six months), and provided support for a South Australian trial of alcohol ignition interlocks for serious/repeat offenders.

In light of international developments, and the growing interest within Australia, it is timely to reassess the relative effectiveness of different drink driving sanctions. In keeping with recent trends in the literature, this paper focuses on the effectiveness of licensing actions, remedial programs and vehicle-based sanctions.

## **THE OBJECTIVES OF DRINK DRIVING SANCTIONS**

Before examining the evidence, it is important to consider the objectives underpinning the use of drink driving sanctions. This is necessary to identify the appropriate criteria by which to judge the success, or otherwise, of different sanctions. In line with criminological principles, a range of objectives or functions have been identified for drink driving sanctions including: retribution; incapacitation or restraint; reform (specific deterrence and rehabilitation); and general deterrence (Nichols & Ross, 1990; Ross, 1992; Mirrlees-Black, 1993; South, 1998).

Retribution represents the most basic function of criminal punishment, and is concerned with balancing the crime committed by an offender with a commensurate punishment (Ross, 1992). Because society believes that the punishment is justified on moral grounds, it is not necessary for it to produce a change in the offender's behaviour or to make them a better person. However,

it is important that the crime is 'wilful' (South, 1998), and that the punishment 'fits the crime' and is not excessive or disproportionate to the original action (Ross, 1992; Mirrlees-Black, 1993). Ross (1992) argues that it is difficult to assess the retributive effectiveness of drink driving sanctions. This requires an estimate of the culpability of drink drivers that is problematic. For example, while the crash risk of a drink driver (particularly at a high blood alcohol concentration) is increased substantially, most drink driving episodes do not result in a crash and hence any harm to the community. As such, should drink driving sanctions be designed to match the potential harm of the action or the objective probability of it leading to death and injury? In practice, the appropriateness of various sanctions tends to be assessed in terms of perceived fairness.

A second function of drink driving sanctions relates to their capacity to restrain or incapacitate offenders from committing further offences (Nichols & Ross, 1990; Ross, 1992). An extreme form of incapacitation involves confinement in gaol or some form of supervised detention. In effect, this removes all opportunities for re-offending during the term of the sentence. Licence removal and alcohol ignition interlocks represent less coercive forms of incapacitation.

A third function of criminal sanctions is to reform offenders so they no longer need to, or at least choose not to, engage in criminal activity (Ross, 1992). Reform can operate through two processes: rehabilitation and specific deterrence. The goal of rehabilitation is to resolve the underlying medical or psychosocial factors contributing to criminal behaviour, in order to reduce the rate of reoffence. In contrast, the goal of specific deterrence is to deter offenders from reoffending due to the fear of further punishment. In the latter case, it is the threat of punishment that motivates behaviour change.

Finally, criminal sanctions can perform a general deterrent function (Homel, 1988; Ross, 1992; Mirrlees-Black, 1993; South, 1998). General deterrence refers to the capacity of sanctions to influence the behaviour of individuals through the threat of punishment, rather than via direct experience. As such, sanctions that achieve a general deterrent effect can influence the behaviour of the community in general, not just those who are punished. This usually results in these sanctions being highly cost-effective (South, 1998). The significance of general deterrence in the area of drink driving was highlighted by Nichols & Ross (1990, p.34):

*"The impact of any sanctioning policy for drunk-driving offenses on the general driving public is much more important than its impact on the offenders who are punished. Programs which result in reduced recidivism by the small minority of drinking drivers who are caught and punished may be worthwhile to the extent that they reduce impaired driving by these individuals and perhaps improve their personal well-being. However, without having an impact on the total population of drivers such program cannot produce a major change in drunk driving and its consequences."*

Drink driving sanctions can influence the behaviour of the general community in a number of ways. In-keeping with classical deterrence theory, the general community will be deterred from drink driving if individuals perceive the threat of punishment to be sufficiently severe, certain and swift (Homel, 1988; Ross, 1992). As such, in some circumstances the introduction of a new sanction may deter drink driving by heightening the perceived consequences of apprehension (irrespective of any changes in detection rates). Similarly, the existence of effective sanctions will enhance the general deterrent value of policing strategies designed to improve the certainty of detection and apprehension. In other words, drivers will be more sensitive to changes in police detection practices if they are concerned about the punishment they are likely to experience. Finally, "*criminological theory suggests that, through the processes of habit-formation and example-setting, executing the threat (of punishment) can eventually result in normative changes that render the legal threat less necessary*" (Ross, 1992, p.64).

## **METHOD**

The paper is based on a review of the available literature relating to drink driving licence actions, remedial programs and vehicle-based sanctions. The effectiveness of the various sanctions is assessed according to the key functions outlined above. While an international perspective is adopted, the primary aim is to identify appropriate policy directions for Australia.

It is often difficult to disentangle the effects of individual sanctions from those of other drink driving countermeasures (Popkin, 1997). This is compounded by the predominance of North American and European studies in the literature, which makes it difficult to generalise the results to the Australian context. In particular, the deterrent value of certain sanctions will be influenced by a range of factors, including the level and type of police enforcement, the legal blood alcohol limit, and the prevailing social environment in the relevant jurisdiction. Two strategies are adopted to limit this problem. Firstly, wherever possible, special emphasis is given to relevant Australian studies. Secondly, an attempt is made to identify the key contextual factors that appear to contribute to the success or failure of drink driving sanctions in other countries.

Based on themes evident in the literature, the following issues are given special attention in the review:

- the effect of sanctions on the general driving population, as well as drink driving offenders;
- the effectiveness of sanctions with first and multiple offenders;
- variations within sanctions eg. the effectiveness of different types of licence restriction; and
- the effectiveness of administrative versus judicial processes for applying sanctions.

## **RESULTS**

### **Licence actions**

#### **Overview**

Licence actions include a range of restrictions that deprive offenders from the use of their driver's licence. In North America, the primary licence actions are suspension and revocation. Although these terms tend to be used interchangeably, suspended licences are reinstated automatically after the period of suspension while a driver who has had their licence revoked must reapply at the end of the period to have it reinstated (Nichols & Ross, 1990). Although this distinction applies in Australia, the term licence disqualification is used instead of revocation and licence suspension is utilised less widely (usually for a short period after initial arrest or until the matter is heard in Court). In this paper, 'suspension' will be used as a generic term applying to North America, while the term 'disqualification' will be used when referring to Australia or Britain.

Licence actions also vary in the degree to which they restrict driving. For example, licence suspension/disqualification can be used to prohibit offenders from using their licence under all circumstances (sometimes referred to as 'hard' suspension). Alternatively, a restricted version can be applied which permits driving for specific purposes, such as travelling to and from employment or treatment (sometimes referred to as 'soft' suspension) (Nichols & Ross, 1990). In Australia, Queensland, Western Australia and the Australian Capital Territory issue restricted licences to drink drivers on hardship grounds (Watson & Siskind, 1997). However, the practice is far more common in the USA, with 29 states permitting some restoration of driving privileges during the suspension period (IIHS, 1997).

Another major difference relates to whether licence actions are administered judicially or administratively. Traditionally, licence suspension was applied through judicial processes in the USA. This meant that suspension was contingent upon conviction and subject to criminal standards of proof and plea-bargaining (Nichols & Ross, 1990; Williams *et al*, 1991). Over the

last two decades, however, there has been a substantial growth in the use of administrative licence suspension. This process requires less stringent standards of proof and operates from the time a drink driver is arrested, thus increasing the swiftness and certainty of the sanction. As this process tends to be less costly, administrative suspension improves the overall cost-effectiveness of licence loss. By early 1996, over 38 states had enacted laws to permit administrative licence loss in the USA (Knoebel & Ross, 1996). A number of Canadian provinces have also introduced administrative licence suspension (Beirness *et al*, 1997).

In Australia, drink driving offenders are generally arrested and charged to appear in Court. In contrast to the USA, steps have been taken to improve the certainty and consistency of judicially-imposed penalties through the adoption of prescribed penalties for drink driving, including mandatory licence disqualification periods (Homel, 1988). A number of states have also introduced laws which permit the police to issue offence notices to low-range, first offenders which carry an automatic fine and set period of licence disqualification. While these laws were designed to heighten the perceived certainty and swiftness of punishment, their effectiveness remains unclear. Indeed, some have raised concerns about the loss of deterrence associated with attending court (Watson *et al*, 1996; Duhs, 1997).

For some time, the evidence has indicated that licence suspension is a very effective measure, compared with other sanctions commonly applied to drink drivers (Nichols & Ross, 1990; Ross, 1991; Vingilis *et al*, 1990). In North America, the most compelling evidence has emerged from the use of administrative licence suspension laws. Evaluations have suggested that these laws can act as a general deterrent by contributing to a reduction in the level of alcohol-related crashes in the community. In relation to drink driving offenders, they have been linked with reductions in alcohol-specific offences and crashes, as well as total offences and crashes (Nichols & Ross, 1990; Peck, 1991; Williams *et al*, 1991; Beirness *et al*, 1997; DeYoung, 1997). Although the evidence suggests that these effects can persist well after the end of the suspension period, this may, in part, be due to offenders choosing not to become relicensed (Nichols & Ross, 1990; Williams *et al*, 1991).

Australian experience indicates that court imposed licence disqualification can be an effective sanction with offenders. Homel (1981, cited in Nichols & Ross, 1990) found that relatively long periods of licence disqualification were associated with lower drink driving re-offence rates. More recently, a Queensland study examining the records of over 25,000 disqualified drink drivers found that crash and offence rates during the disqualification period were about one third of the rate incurred during legal driving (Siskind, 1996).

The evidence concerning the combined effect of licence actions and remedial programs on offenders has been historically mixed (Nichols & Ross, 1990). However, there is a body of studies that suggest that remedial programs are more effective in reducing alcohol-specific offences (and possibly crashes), and that the best outcomes with offenders are achieved when the two sanctions are combined (McKnight & Voas, 1991; Peck, 1991; DeYoung, 1997).

### **Retribution effects of licence actions**

The major concern about the appropriateness or fairness of licence actions relates to their impact on an offender's lifestyle, particularly his or her capacity to earn a living. A British study found that while most disqualified drivers considered the sanction justified, some reported that they had lost their job as a direct consequence of the disqualification (Mirrlees-Black, 1993). However, research in the United States suggests that only a small minority of suspended drivers experience employment or income losses (Knoebel & Ross, 1996).

In an interesting analysis of the retributive effect of licence loss, Knoebel & Ross (1996) compared the impact of administrative licence suspension on the employment levels of drink driving offenders with the impact of alcohol-related crashes on the employment of 'innocent' people involved in these crashes. They found that while there was no pronounced impact on the

jobs or incomes of offenders, a substantial effect was experienced by the seriously injured victims. They argued that this justified the continued use of administrative licence loss.

As noted earlier, a common way that jurisdictions attempt to overcome this problem is by issuing restricted licences to offenders who can demonstrate that they (and their family) would overly suffer from losing their licence. However, a number of concerns have been raised about this situation. Firstly, providing restricted licences on employment grounds only is discriminatory; it devalues the importance of educational and domestic functions (Duhs *et al*, 1997). Secondly, the widespread use of restricted licences may undermine both specific deterrence (by failing to break an offender's reliance on driving) and general deterrence (by creating the impression that licence loss is neither certain nor inevitable) (Watson & Siskind, 1997).

In a Queensland study, Watson & Siskind (1997) found no statistical difference between the reoffence rates of drink drivers granted restricted licences with those receiving full licence disqualification, at least during the term of the sanction. However, they noted that Magistrates are selective about granting restricted licences in Queensland, tending to favour older drivers with better driving records. Therefore, the results do not necessarily countenance the wider use of restricted licences, since they may not be as effective with more recalcitrant offenders. Furthermore, the authors noted that further research was required to determine whether restricted licences undermine the general deterrent effect of licence loss for drink driving.

From another perspective, the retributive value of licence loss is undermined if offenders continue to drive during the suspension/disqualification period. In effect, these offenders are not experiencing the full impact of their punishment. As will be discussed below, this is a major problem in most jurisdictions.

### **Incapacitation effects of licence actions**

A range of studies has suggested that the effectiveness of licence actions is primarily derived from their ability to incapacitate or, at least, restrict offenders from driving. This is illustrated by the fact that licence actions reduce non alcohol-related offences and crashes among offenders, as well as alcohol-specific incidents (Nichols & Ross, 1990; Ross, 1991; McKnight & Voas, 1991; Peck, 1991; Siskind, 1996). In other words, licence actions are effective exposure control measures that produce road safety benefits well beyond their impact on drink driving.

However, the level of illegal driving by suspended/disqualified drivers is relatively high in most jurisdictions. Surveys in both the United Kingdom (Mirrlees-Black, 1993) and the United States (Williams *et al*, 1984; Ross & Gonzales, 1988) have found self-reported levels of disqualified/suspended driving ranging from 25% to almost 70%. Similarly, two Australian surveys found that over 30% of respondents admitted driving while disqualified (Robinson, 1977; Smith & Maisey, 1990). The self-report nature of these studies suggests that these findings may well under-estimate the extent of the problem.

A consistent feature of these surveys is that many of the respondents, who admit driving, report adopting strategies to reduce their risk of detection, including driving less frequently and driving more safely or cautiously. Accordingly, it is commonly claimed in the literature that the safety benefits produced by licence actions are largely due to reduced, more prudent driving (Williams *et al*, 1984; Ross & Gonzales, 1988; Nichols & Ross, 1990; Ross, 1991; Job *et al*, 1994).

However, Warren (1982, cited in Mirrlees-Black, 1993) suggests that what is learnt by an offender while disqualified is not how to be a better driver but how to avoid detection. This assertion is partly supported by recent Australian evidence indicating that disqualified drivers (and unlicensed drivers in general) are significantly over-represented in severe crashes compared with licensed drivers. Moreover, these crashes are more likely to involve alcohol and drugs, motorcycle use, exceeding the speed limit and excessive speed for the conditions, and to occur on the weekend and at night (Harrison, 1997; Watson, 1997). It is unclear whether the behaviour of crash-

involved disqualified drivers is indicative of disqualified drivers as a whole, or whether they represent a special sub-set who are less concerned about the risks of detection and punishment. While further research is required, the results draw into question the common assumption that disqualified drivers drive in a more cautious manner (Watson, 1997).

In addition, it is likely that many offenders who choose not to re-obtain a licence after the expiry of their disqualification/revocation period continue to drive unlicensed. As noted by Ross (1991, p. 65) "*the experience of driving while unlicensed teaches that participation in the licensing system is unnecessary if one takes precautions in the amount and nature of driving*". This practice further undermines the integrity of the licensing system by reducing the impact of other sanctions used to manage driver behaviour, such as demerit points (Watson *et al*, 1996).

Therefore, in terms of incapacitation, while licence loss is an effective measure it is far from perfect (Ross, 1991). Indeed, from a compliance point of view licence disqualification/suspension is a relatively inefficient measure. The likely outcome of this low compliance is that "*the full impact of the suspension is compromised and the long-term effectiveness of the system potentially eroded*" (Beirness *et al*, 1997).

### **Specific deterrent effects of licence actions**

Although licence actions may prompt an individual to seek assistance for an alcohol problem, they are not primarily designed to address the underlying factors contributing to drink driving. As such, any reformatory effect of licence actions should predominantly operate through specific deterrence. In this regard, McKnight & Voas (1991) suggest that licence suspension is less effective as a specific deterrent than it is in incapacitating offenders. For example, they cite US evidence indicating that full licence suspension is no more effective in deterring alcohol-related offences and crashes than restricted licences. (These findings are consistent with those of Watson & Siskind (1997), mentioned earlier.) Rather, the superiority of full licence disqualification is evident in total offences and crashes, which is largely a product of reduced exposure. Indeed, McKnight and Voas (1991) argue that remedial programs are more effective in reducing drink driving recidivism than licence suspension.

It is likely that the relative ineffectiveness of full licence loss as a specific deterrent is linked to the high rates of disqualified/suspended driving documented in many jurisdictions. In terms of deterrence theory, it suggests that the perceived risk of being apprehended for driving without a valid licence is extremely low. The threat of further disqualification will have minimal impact on many offenders, since they will have learnt that it is possible to evade detection if they take "*precautions in the amount and nature of driving*" (Ross, 1991, p.65).

### **General deterrent effects of licence actions**

The effectiveness of a sanction as a general deterrent is highly significant; it reflects its capacity to influence community-wide drink driving behaviour. Some sanctions, like remedial programs and alcohol ignition interlocks, are primarily designed to modify the behaviour of drink driving offenders. Others such as licence actions, gaol sentences and fines are generally intended to perform a general deterrent function, as well as target offenders. Not surprisingly, many of the reviews in this area have attempted to establish the general deterrent effect of licence actions relative to other sanctions like gaol sentences (eg. Nichols & Ross, 1990; Voas & Lacey, 1990; Ross, 1992).

A range of North American studies have suggested that licence suspension can act as a general deterrent by reducing the overall rate of crashes likely to involve alcohol (Nichols & Ross, 1990; Peck, 1991; Williams *et al*, 1991; Beirness *et al*, 1997). However, some qualifications need to be placed on these studies. Firstly, they almost exclusively relate to the use of administrative licence suspension. Indeed, it has been suggested that the success of administrative suspension is linked to the greater certainty and swiftness delivered by this process, compared with judicially-imposed licence suspension (Nichols & Ross, 1990; Williams *et al*, 1991). Secondly, in many cases the studies evaluated the impact of a package of



drink driving countermeasures, often featuring a range of sanctions besides administrative licence suspension (eg. Peck, 1991; Beirness *et al*, 1997). This makes it difficult to be definitive about the specific effect of licence actions. However, it is worth noting that community surveys in the United States "*generally indicate that the license suspension penalty is the best understood and most feared of the drunk driving sanctions*" (Voas & Lacey, 1990, p.146).

Moreover, a smaller number of US studies have attempted to disentangle the general deterrent effect of licence actions from other sanctions, by comparing their impact across a range of states. For example, Zador *et al* (1988, cited in Nicols & Ross, 1990) found that while administrative licence suspension, mandatory gaol sentences and illegal *per se* provisions were all linked with reductions in fatal crashes, the largest reductions were associated with licence suspension. Similarly, Klein (1989, cited in Nichols & Ross, 1990) found that administrative licence suspension laws more frequently resulted in reductions in alcohol-related fatal crashes than other sanctions.

These results are consistent with other studies that have indicated that gaol sentences have only a limited impact as a general deterrent (Nichols & Ross, 1990; Voas & Lacey, 1990). In addition, gaol sentences often result in high costs to the judicial and correctional systems. These results do not necessarily imply that gaol should be abandoned, since it may still serve a useful purpose in highlighting the seriousness of drink driving to the community and confining some 'hard-core' offenders. However, a greater emphasis needs to be placed on the use of licence actions and fines (Nichols & Ross, 1990). In summary, Nichols & Ross (1990, p.52) concluded:

*" . . . that the consistency of the findings provides a measure of confidence in the proposition that the application of swift and sure licence actions, compared with any other known sanction, is more likely to result in population-wide reductions in alcohol-related fatal crashes".*

Very little research into the general deterrent effect of licence actions has been conducted in Australia. Qualitative research in Queensland has suggested the threat of licence loss is a very salient sanction, and usually the most feared among both younger and older drivers (Watson *et al*, 1996). However, drivers generally acknowledge that the risk of being apprehended for driving without a licence is very low. Hence, the possibility exists that the general deterrent value of licence loss would be enhanced by improvements in the detection of disqualified/unlicensed driving.

As noted in the introduction, Australian research has tended to focus on the success of Random Breath Testing (RBT) as a general deterrent. This research suggests that RBT has increased the perceived certainty of detection for drink driving by creating the impression that police operations are unpredictable, ubiquitous and unavoidable (Homel, 1993). However, RBT was not introduced into a vacuum in each state, but rather was underpinned by an evolving regime of drink driving penalties. In particular, the states have progressively introduced minimum (or in some cases maximum) penalties for drink driving offences, including mandatory licence disqualification. For example, in NSW, mandatory periods of licence disqualification for different levels of drink driving were implemented approximately three years prior to the introduction of RBT (Homel, 1988). South (1998) has argued that the use of minimum mandatory penalties is an important mechanism in achieving general deterrence in the area of road safety. Hence, it is reasonable to posit that the use of mandatory licence loss in Australia has contributed to the general deterrent effect of RBT.

## Remedial programs

### Overview

Unlike most other drink driving sanctions, remedial programs are not generally designed to be retributive or to incapacitate offenders. Rather, they are intended to reform offenders and thereby reduce the likelihood of further drink driving incidents. Despite this common objective, major differences exist in the focus, content and delivery of remedial programs.

At the broadest level, remedial programs fall into two categories: assessment and rehabilitation. Assessment programs are generally designed to screen and identify drink driving offenders with a high risk of re-offending. These programs use a variety of biological, medical and psychosocial criteria and can be used to assess whether an offender is suitable to be relicensed or to direct them to appropriate rehabilitation (Wells-Parker & Popkin, 1994; Conigrave & Carseldine, 1996). However, there has been considerable debate about the validity of certain assessment criteria, particularly the use of an offender's BAC (eg. Yu & Williford, 1995; Marowitz & DeYoung, 1996). Rehabilitation programs also vary in their content and format, ranging from short educational courses through to therapeutic interventions involving medical treatment, psycho-therapy, or counselling. Increasingly, programs have tended to feature a combination of these modalities (Popkin, 1994; Wells-Parker *et al*, 1995). In addition, major differences exist in the way remedial programs are delivered. In many jurisdictions they are mandated by law and relicensing is contingent upon their completion. In others, attendance at rehabilitation is at the discretion of the court or is voluntary. Furthermore, in many jurisdictions remedial programs are used to complement other sanctions, particularly licence actions, and may be reinforced by probation (Sanson-Fisher *et al*, 1990; Wells-Parker *et al*, 1997).

### Reform effects of remedial programs

Traditionally, there have been difficulties in establishing the effectiveness of drink-driving remedial programs. Foon (1986, p. 140) noted that the area is "*fraught with confusion, and further evidence is needed by way of clarification*". In the USA, evaluations were "*complicated by the tendency of courts to motivate attendance on treatment programs by eliminating or reducing the length of licence suspension*" (Voas and Tippetts, 1990, p. 16).

During the 1980s, the literature tended to suggest that the effectiveness of remedial programs was at worst negligible, and at best limited to subsequent drink driving offences (rather than crashes). For example, Nichols & Ross (1990, p. 46) concluded: "*education and treatment programs may have a reform impact on the subsequent behaviour of DWI offenders exposed to them, but that such effects are small, somewhat inconsistent, often limited to first offenders and/or persons diagnosed as non-problem drinkers, and nearly always limited to subsequent DWI convictions*". Similarly, after reviewing the Australian situation, Sanson-Fisher *et al* (1990, p.141) questioned the likely cost-effectiveness of rehabilitation programs and concluded: "*it appears that existing drink-driver programs may not be effective in their goals*".

Nevertheless, at the same time, other researchers were sounding a more optimistic note about the impact of assessment and rehabilitation programs on drink driving recidivism in both the USA and Europe (eg. Mann *et al*, 1983; Raffle, 1989). By the early 1990s, a number of reviewers were suggesting that remedial programs were more effective in reducing alcohol-specific offences and crashes, than licence actions. However, because licence actions were more effective in reducing overall offences and crashes, the best road safety outcomes were produced when the two sanction types were combined (McKnight & Voas, 1991; Peck, 1991; Sadler *et al*, 1991). Recently, DeYoung (1997) found that the combined use of alcohol treatment with licence actions was associated with the lowest recidivism rates for both first and multiple drink driving offenders. As already noted, these results suggest that licence actions are primarily an exposure-control measure, while remedial programs are more sensitive to the factors contributing to drink driving recidivism.

Perhaps the most compelling evidence in favour of remedial programs was obtained from a meta-analysis of 215 independent programs, conducted by Wells-Parker *et al* (1995). This study confirmed an average effect size of 7-9% in terms of reduced drink driving offences and alcohol-related crashes. The review suggested that multi-strategy programs were most effective, particularly those involving education, psychotherapy, counselling and follow-up contact or probation. Wells-Parker *et al* (1996) contend that treatment effects have traditionally been under-estimated due to the strong emphasis placed on educational interventions for dealing with all offenders. These findings are consistent with other evidence that problem drink drivers are not a homogenous group and that many remedial programs have adopted too narrow a focus (eg. Donovan, 1983; Bakker *et al*, 1997). While the Wells-Parker *et al* (1995) study confirmed the potential effectiveness of rehabilitation, it did not consider the costs typically associated with remedial programs. Hence, the cost-effectiveness of different approaches remains unclear (Watson *et al*, 1996).

Over recent years, little research has been conducted into the effectiveness of remedial actions in Australia. In NSW, a limited evaluation was undertaken of a trial program established to assess whether high range drink driving offenders were medically fit to re-obtain their licence after disqualification (Conigrave & Carseldine, 1996). The evaluation suggested that the program may have produced a health benefit, but did not assess the road safety impacts. However, it is possible that the program inadvertently contributed to unlicensed driving, since many eligible offenders did not undergo assessment (Staysafe, 1993). In central Queensland, a multi-strategy rehabilitation program is currently being trialed (Sheehan *et al*, 1995). This program is implemented through the court system, in order to complement the probationary orders and licence disqualification applied to offenders. While preliminary results have been encouraging the sample size is relatively small. However, this problem will be soon rectified, as there are plans to expand the program across the state.

## **Alcohol ignition interlocks and other vehicle-based sanctions**

### **Overview**

Since the late 1980s, a number of jurisdictions in the USA and Canada have implemented alcohol ignition interlock programs for drink driving offenders. The interlocks are administered either judicially or administratively and are generally a condition of licence renewal. In effect, these devices will not allow a vehicle to be started until a breath test has been passed (at pre-set BAC level). Early evaluations were promising suggesting that interlocks could reduce recidivism over and above more traditional approaches, at least while the interlock was fitted to an offender's vehicle (Baker and Beck, 1991; Morse & Elliott, 1992; Jones 1992, cited in Frank, 1997). In Ohio, Morse & Elliott (1992) found that the use of interlocks was associated with a 65% reduction in the likelihood of drink driving reoffence over a 30 month period, compared to licence suspension. It was also associated with a 91% decrease in the rate of driving while suspended offences. Popkin *et al* (1993) found that the use of interlocks was effective in reducing recidivism among second-time offenders in North Carolina. However, the recidivism rate of this group returned to higher levels once the interlock was removed.

A range of problems limited the generalisations that could be made from these early studies, including small sample sizes, short follow-up periods and, most importantly, biases introduced by the self-selection or court-selection of program participants (Frank, 1987; Weinrath, 1997). (As is discussed below, these problems have informed the development of the next wave of evaluations.) Despite these problems, interlocks have been strongly supported in many jurisdictions. By 1997, thirty-four states in the USA had passed interlock legislation (Frank, 1997). In Australia, a proposed Victorian trial of interlocks for repeat, high range BAC offenders experienced a variety of implementation difficulties (Staysafe, 1993). More recently, South Australia has developed a trial of interlocks for serious/repeat offenders (ATC, 1997).

Furthermore, a number of other vehicle-based sanctions have been developed to reduce suspended/disqualified driving. Among the types of sanctions that have been implemented or trialed are: license plate tagging, impoundment, confiscation or immobilisation of vehicles; and electronic licences (Hedlund & Fell, 1995; Stewart *et al*, 1995; Beirness *et al*, 1997; Goldberg, 1997; Voas *et al*, 1997). While these measures are designed to reduce all unlicensed driving, they are of particular relevance to drink driving. Firstly, in most jurisdictions, drivers with a history of unlicensed driving will also have been detected for drink driving (Bakker *et al*, 1997). Secondly, these sanctions offer the potential to strengthen the effectiveness of licence actions and further deter the general public from drinking and driving.

### **Retribution effects of interlocks and other vehicle-based sanctions**

Concerns have occasionally been raised about the inconvenience of alcohol ignition interlocks for offenders and their families. To some degree, these concerns have been minimised by the tendency for jurisdictions to utilise interlocks with high-range BAC and/or repeat offenders. Moreover, anecdotal evidence (South, 1990; Staysafe, 1993) suggests that while many offenders may originally resent the imposition of the devices, they come to accept them. It also appears they can perform an educational and motivational function. *"It apparently provides that extra incentive needed to refrain from drinking"* (South 1990, p.11).

The retribution effects of other vehicle-based sanctions are less clear. In particular, further research is required to determine whether those sanctions that prevent a car being driven (eg. vehicle immobilisation or confiscation) are overly punitive in their effect on offenders, their families and other involved persons. For example, preliminary results from a vehicle immobilisation program in Ohio indicate that judges have failed to apply the sanction uniformly, particularly when offenders were driving vehicles belonging to other people (Stewart *et al*, 1995).

### **Incapacitation effects of interlocks and other vehicle-based sanctions**

The evidence indicates that it is possible for offenders to circumvent or tamper with alcohol ignition interlocks, thereby reducing their incapacitation effect. However, this practice does not appear widespread (South, 1990; Morse & Elliott, 1992), and current interlocks have increasingly become robust to circumvention (Beirness *et al*, 1997). Moreover, there is evidence from those programs using interlocks with electronic data loggers, that they do prevent alcohol-impaired drivers from operating their vehicles (Morse & Elliott, 1992).

More broadly, the incapacitation effects of interlocks should be reflected in the level of recidivism during the time the devices are fitted to the vehicles of offenders. While reform effects may also play a role in reducing recidivism at this time, they should be more relevant once the devices are removed.

Two recent studies have provided stronger evidence that interlocks are effective during the period in which they are fitted. The first of these was conducted by Weinrath (1997) and involved a retrospective comparison of the effect of alcohol ignition interlocks in Oregon. To overcome selection bias problems, he compared a random sample of interlock drivers with a matched comparison group who received only licence suspension. He found that the comparison group was twice as likely to reoffend than the interlock group.

The second study is being conducted in Maryland and features a fully randomised design (Beck *et al*, 1997). Multiple drink driving offenders are being assigned randomly to either an interlock condition or a treatment program. The results for the first year suggest that interlocks can significantly reduce reoffence compared to the control condition. Furthermore, the results do not appear to be a product of differences in relicensure or administrative monitoring. Nevertheless, some questions remain about the results. For example, over a fifth of the subjects in the interlock group were not required to have an interlock fitted because they did not own a vehicle. Instead, they were relicensed on the condition they sign a waiver that they wouldn't own or

operate a vehicle that didn't have an interlock fitted. As such, it is unclear with these offenders whether their driving was mediated at all by an interlock during the study period.

Few studies have been published evaluating the effectiveness of other vehicle-based sanctions. Beirness *et al* (1997) report results from an evaluation of vehicle impoundment for drivers convicted of driving while suspended in Manitoba, Canada. They compared the records of drivers who had their vehicles impounded with a comparison group convicted prior to the introduction of the law. The results indicated that vehicle impoundment was associated with significantly fewer reconvictions for suspended driving. Voas *et al* (1997) provide some evidence that license plate stickers are effective in reducing the level of moving violations, drink driving offences and driving while suspended offences among suspended offenders. While the license plate stickers would have assisted enforcement officers identify offenders, it is likely that these results are largely a product of specific deterrence (*ie.* offenders would have been discouraged from driving due to their higher visibility).

### **Reform effects of interlocks**

As noted above, the effectiveness of interlocks during the period in which they are fitted may be due to both incapacitation and specific deterrence. For example, the experience could deter offenders from circumventing the device for fear of having the interlock period extended. However, a better indication of the specific deterrent value of interlocks should be obtained in the period following the removal of the devices.

On this issue the evidence remains unclear. Many of the studies conducted to date, including the Maryland study, focus on the period when the interlocks are fitted. As noted earlier, Popkin *et al* (1993) found that the positive effects of interlocks on second offenders did not persist once they were removed. Similar results were obtained with second offenders in West Virginia (Tippetts & Voas, 1997). Weinrath (1997) found that, 15 months after relicensing, the recidivism rate among offenders who received an interlock was significantly lower than that of a comparison group. However, the difference was relatively small (5%).

These results suggest that alcohol ignition interlocks, similar to licence actions, may be more effective as an exposure-control measure and only delay recidivism. As a consequence a joint Canadian-US effort is examining in Alberta whether the combined use of interlocks with a remedial program is more effective in reducing drink driving recidivism (Frank, 1997). The Alberta Interlock program features a trial three-part intervention delivered by case managers, designed to "*strengthen the commitment of the alcohol offenders to a lifestyle change*" (Marques *et al*, 1997, p.202). A preliminary evaluation has found only subtle differences between the reported behaviour of offenders receiving case management and those in a control group.

### **General deterrent effects of vehicle-based sanctions**

At this stage, only weak evidence has emerged suggesting that vehicle-based sanctions can act as a general deterrent. Beirness *et al* (1997) found evidence of a reduction in alcohol-involved driver fatalities associated with the introduction of vehicle impoundment for suspended drivers and administrative licence suspension in Manitoba. However, they were unable to isolate the individual effects of the two measures. Voas *et al* (1997) found evidence for a general deterrent effect of licence plate stickers in Oregon, in terms of reduced offences and crashes, but not in Washington state. The researchers identified a number of differences in the way the law was implemented and enforced in each state, which may account for the differing outcomes.

## **DISCUSSION**

The review has confirmed that licence actions are a very effective road safety countermeasure. They are the only drink driving sanction which have been consistently associated with reductions in community-wide drink driving behaviour. This increases dramatically their road safety impact, rendering them more cost-effective than sanctions that target offenders only. In addition, licence actions are an effective tool for managing drink driving offenders. They can

reduce overall offence and crash rates among first and multiple drink driving offenders, as well as alcohol-specific incidents.

With regard to offenders, it appears that licence actions are primarily an exposure-control measure: their effectiveness is largely derived from the way they restrain or limit driving. However, licence actions are far from perfect as an offender management tool, since many disqualified/suspended drivers continue to drive (albeit in a reduced and, possibly, safer manner). Hence, the effectiveness of licence actions would be greatly enhanced by improving the detection of unlicensed driving. Within the Australian context, this could be achieved by the national adoption of compulsory carriage of driver's licences and the more widespread checking of driver's licences, for example, at RBT operations (Robinson, 1977; Watson *et al*, 1996; Staysafe, 1997). It is also likely that improvements in the detection of unlicensed driving would enhance the general deterrent effect of licence loss.

In North America, the evidence supporting licence loss has primarily been derived from evaluations of administrative licence suspension, rather than judicially-imposed actions. However, it is difficult to interpret the significance of this for Australia. In the USA it appears that judicially-imposed penalties, including licence suspension, were ineffective because they were applied in an inconsistent and irregular manner (Nichols & Ross, 1990; Williams *et al*, 1991). In Australia, however, governments have addressed this problem by prescribing minimum and/or maximum penalties for drink driving, including mandatory licence disqualification. This has been identified as an important means of communicating the 'unavoidability' of punishment and promoting general deterrence (South, 1998). Nonetheless, it is unclear whether the certainty and swiftness of court-imposed licence actions in Australia is on a par with administratively-imposed actions in the USA. This is an area requiring further research. As a starting point, it would be useful to examine whether the use of traffic offence notices for certain drink driving offences in some Australian states has heightened the perceived certainty and swiftness of punishment, relative to court-imposed penalties.

USA research suggests that licence suspension is not overly punitive in its effect on offender's income. Nevertheless, restricted licences are used as an alternative to full licence loss in many jurisdictions, including some Australian states. While the use of restricted licences do not reduce overall offences and crashes to the same degree as full licence loss, they perform no worse in reducing alcohol-specific incidents. Therefore, in terms of reducing the need for illegal driving, there may be an argument for utilising restricted licences. However, further research is required to assess whether the use of these licences, particularly if widespread, undermines the general deterrent effect of licence loss.

Contrary to previous negative reviews, a strong body of evidence is now emerging confirming the effectiveness of drink driving remedial programs with offenders. The evidence suggests that these programs can be more effective in reducing alcohol-specific offences and, possibly crashes, than licence actions. This success presumably reflects their capacity to more effectively address the factors contributing to drink driving behaviour. However, the results suggest that drink driving offenders are not a homogeneous group and the most effective remedial programs utilise a multi-strategy approach. In addition, the relative cost-effectiveness of remedial actions remains unclear. Significantly, the research suggests that the combined use of licence actions and remedial programs is most effective in reducing drink driving recidivism among first and multiple offenders and delivers the best road safety outcomes. In Australia, there is a need to develop and evaluate further initiatives like the drink driving rehabilitation program being trialed in central Queensland. This program is using a multi-strategy approach to complement court-imposed licence disqualification and probation.

Further evidence has emerged confirming that alcohol ignition interlock programs can have an additive effect in reducing drink driving recidivism, over and above conventional sanctions, at least while the devices are fitted in the vehicles of offenders. However, the effect once the devices are removed remains unclear. Indeed, there is some evidence that interlocks may only delay recidivism, with reoffence rates returning to higher levels once they are removed. This

suggests that interlocks, similar to licence actions, do little to directly address the factors contributing to drink driving recidivism. Consequently, some promise is offered by the Canadian initiative to combine the use of interlocks with rehabilitation. In Australia, researchers have long advocated a trial of alcohol ignition interlocks (Homel, 1988; Staysafe, 1993). While the South Australian trial will be keenly monitored, the opportunity exists for other jurisdictions to conduct their own trials (preferably using fully randomised designs like the Maryland trial). In particular, it would be useful to examine the combined use of licence actions, interlocks and rehabilitation within the Australian context.

The evidence concerning other vehicle-based sanctions, like vehicle impoundment/immobilisation and licence-plate stickers, remains preliminary. Further research is required to confirm the effectiveness of these approaches and to assess the impacts on offenders and their families.

Despite the successes detailed in this paper, offence and crash data indicate that drink driving recidivism remains a serious problem. For example, in the USA about a third of all drivers arrested for drink driving are repeat offenders, while about 1 in 8 of the alcohol-impaired drivers involved in fatal crashes have a drink driving conviction within the last three years (Hedlund & Fell, 1997). Sheehan (1993) cites evidence that 20% of drivers convicted for drink driving in Queensland reoffend within four years. Therefore, while many drink driving sanctions are effective with offenders, it could be argued that they are not effective enough.

Two main directions appear promising. The first involves the more co-ordinated and complementary use of various sanctions, including improved assessment procedures to better match offenders to the most appropriate interventions. The second involves further research to identify the characteristics of persistent drink drivers who do not necessarily come to the attention of authorities, in order to develop sanction strategies which are more effective with the general public (Hedlund & Fell, 1997).

## CONCLUSIONS

Over the last two decades, Australia has experienced impressive reductions in the level of alcohol-related crashes. Various evaluations have demonstrated a link between these reductions and the operation of RBT (Henstridge, Homel & Mackay, 1997). In particular, it appears that RBT has achieved a general deterrent effect by increasing the perceived certainty of detection for drink driving (Homel, 1988). However, based on overseas evidence, it is likely that the use of mandatory licence disqualification in Australia has contributed to general deterrence by reinforcing the perceived certainty of punishment. In addition, there continues to be a greater focus in Australia on improving licence actions, rather than introducing sanctions like mandatory gaol sentences or very severe fines (eg. ATC, 1997). The available evidence strongly supports the cost-effectiveness of this strategy.

While licence disqualification is widely used in Australia, scope exists to improve its effectiveness, particularly as an offender management tool. In addition, consideration needs to be given to other strategies to improve the management of drink driving offenders. The key policy implications emerging from this review are detailed below.

- Priority should be given to policies that enhance the perceived certainty and swiftness of licence disqualification within the community, in order to maximise its effectiveness as a general deterrent. For example, moves to standardise minimum licence disqualification periods across Australia should be appropriately publicised and evaluated. Further research is also required to assess the capacity of administrative processes to improve the certainty and swiftness of licence disqualification within the Australian context.

- There is an urgent need to develop and implement improved methods of detecting disqualified drivers. The least costly of these would involve the national adoption of compulsory carriage of driver's licences and the more widespread checking of licences at RBT. The effectiveness of various North American vehicle-based sanctions for suspended drivers should be closely monitored, along with technological initiatives such as electronic licences. While efforts to reduce disqualified driving will improve the effectiveness of licence disqualification as an offender management tool, it should also enhance the general deterrent impact of licence loss. This will provide considerable cost justification for countermeasures in this area.
- The benefits of restricted licences appear minimal. While they appear to reduce drink driving recidivism on a par with full disqualification, they do not deliver the same reductions in overall offences and crashes among offenders. In addition, further research is required to assess whether the use of restricted licences undermines the general deterrent effect of licence disqualification.
- There is a need to develop and evaluate systems for managing drink driving offenders that facilitate the complementary use of licence actions and remedial programs. This would enable further research into the development of low cost assessment procedures, designed to match offenders to the most appropriate intervention.
- It would be ideal to conduct a trial of alcohol ignition interlocks in Australia that featured the integrated use of the devices with licence actions and a remedial program. This trial should preferably utilise a fully randomised design and monitor both the short-term and long-term effects on offenders.
- Further research is required into the psychological, social and environmental factors contributing to drink driving recidivism and disqualified driving, in order to develop and trial more effective drink driving sanctions.

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## **AUTHOR BIOGRAPHY**

Barry Watson graduated from the University of Sydney in 1983 with a Bachelor of Arts Degree, Honours in Psychology. Since this time, Barry has accumulated a wide range of experience in road safety research and policy development, arising from positions with the NSW Traffic Authority (1984-86), the NRMA (1986-87; 1988-1993) and Queensland Transport (1993-97). Barry has conducted research into a range of behavioural issues including: drink driving, speeding, driver licensing, driver education, traffic law enforcement and unlicensed driving. In 1997, Barry commenced a PhD with the Centre for Accident Research and Road Safety (CARRS-Q), based at the Queensland University of Technology (QUT). More recently, Barry has taken up a temporary position of Lecturer in Road Safety with CARRS-Q.